YASHCHENKO, V.A., inzh.

Vacuum heat treatment furnace [from "Stahl und Eisen," no.20,
1960]. Met. i gornorud. prom. no.1:87 Ja-F '62.
                                             (MIRA 16:6)
          (Germany, West—Furnaces, Heat treating)

YASHCHENKO, V.A., inzh.

Intensifying the processes of producing metal. Met. i gornorud. prom. no.6:83   N-D '62.   (MIRA 17:8)

YASHCHENKO, V.A., kand. tekhn. nauk

Most important reserve for increasing the efficiency of
blooming mills and slabbing mills. Met. i gornorud. prom.
no.1:34-35 Ja-F '64.   (MIRA 17:10)

YASHCHENKO, V.A., kand.tekhn.nauk

All-Union conference of rolling mill workers. Met. i gornorud.
prom. no. 2:81 Mr-Ap '64.   (MIRA 17:9)

YASHCHENKO, V.A., kand. tekhn. nauk

Main objectives in improving the quality of rolled products.
Met. i gornorud. prom. no.4:38-40 Jl-Ag '64.

(MIRA 18:7)

YASHCHENKO, V. D.

27

Substitution of steam for carbon dioxide in the hydrogenation of oils. V. YASH-
CHENKO. *Masloboino Zhirovoe Delo* 1939, No. 5, 23-4; *Chimie & industrie* 23, 427-8.
—Before removal of the catalyst after hydrogenation CO_2 is passed through the
hydrogenation vessel. Passing steam at about 120-40° (to prevent condensation)
was found equally satisfactory.   A. PAPINEAU-COUTURE

A S M - S L A   METALLURGICAL LITERATURE CLASSIFICATION

YASHCHENKO, V. D.

Hydrogenation tests in presence of nickel formate.
V. Yashchenko. *Maslobolno Zhirovoe Delo* 10, No. 11,
22-3(1934); *Chimie & industrie* 34, 404.— Ni(HCO₃)₂
is prepd. from NiSO₄ and NaHCO₃. The filtered and
dried product is mixed with oil in the proportion of 50 kg.
per 500 kg. of oil previously raised to 80-120°. The mixt.
is heated to 170-80°; H is passed through the retort,
and the temp. is raised progressively to 220° in 2 hrs., to
420° in a further 2 hrs., and is held for 1 hr.; during these
5 hrs. of heating the Ni(HCO₃)₂ is reduced and hydrogen-
ates the oil. Though the reduction, which takes place

according to the equation Ni(HCO₃)₂ = Ni + CO + CO₂ +
H₂O, theoretically does not require any H, it was found
that the catalyst obtained in absence of H is inactive.
Before reduction the Ni(HCO₃)₂ must be triturated with
a well-refined oil of low acidity. Drying should be carried
out at 70-100°. The catalyst obtained under these condi-
tions is superior to the usual catalyst.   A. P.-C.

JASHCHENKO, I.D.

Purification of nickel sulfate solutions . . . I.D. Yash-
chenko . . . .
. . . .
genera . . . .
conts . . . .
calcined soda (T. to leave 4-5 g of acid. This soln heated
. . . . During that time every
. . . . is analyzed for . .
. . . . g per . . . .
. . . . After purification hs of the catalyst . . . .
. . . . moisture 3% . . . .

YASHCHENKO, V.G.

Synoptic conditions promoting the fall of large amounts of
precipitation in Estonia. Sbor. rab. po sinop. no.5:92-98
'60.   (MIRA 14:8)

1. Tallinskoye byuro pogody.
            (Estonia—Precipitation (Meteorology))

YASHCHENKO, V.K.

Chemical analysis of ethereal oil of Amorpha fruticosa L. Soob.o
nauch.rab.chl.VKHO no.4:34-39 '54.   (MIRA 10:10)
          (Essences and essential oils)   (Amorpha)

YASHCHENKO, V.K., kandidat farmatsevticheskikh nauk; TODOSHCHENKO, M.D., starshiy prepodavatel'.

Introducing the burette system in pharmacy practice. Apt.delo 5 no.6:
7-10 N-D '56.
(BURETTES)   (PHARMACY)   (MIRA 10:1)

YASHCHENKO, V.K.; MURATOVA, I.O.; NOVIKOV, V.I.

Study of the complex of active substances and trace elements in
the raw material and preparations of Adonis vernalis L. Farmatsev.
shur. 15 no.6:37-42 '60.   (MIRA 14:11)

1. Kafedra tekhnologii likiv ta galenovikh preparativ (zav.kafedroy
dotsent V.K.Yashchenko) i kafedra farmakologii (zav.kafedroyu prof.
G.E.Batrak [Batrak, H.Ye.]) Dnipropetrovs'kogo medichnogo institutu.
          (ADONIS)   (PLANTS—CHEMICAL ANALYSIS)

BUBON, N.T.; YASHCHENKO, V.K.

Use of flame photometry in the analysis of pharmaceutical prepa-
rations containing sodium. Report No.1. Apt. delo 13 no.2:27-31
Mr-Ap '64.   (MIRA 17:12)

1. Farmacevticheskiy fakul'tet Vitebskogo meditsinskogo instituta.

LUKASHENKO, I.A., kand.tekhn.nauk; YASHCHENKO, V.V., inzh.

In-situ investigations of glass reinforced concrete elements of
industrial buildings. Stroi.konstr. no.2:14-24 '65.

(MIRA 18:12)

1. Nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy
Gosstroya SSSR, Kiyev (for Yashchenko).

S/096/62/000/011/005/006
E193/E383

AUTHORS: Gotlib, Ye.A., Polyakova, R.B. and Yashchenko, Ya.V.,
            Engineers

TITLE: Welding of austenitic steels ЭИ-695Р (EI-695R) and
            ЭП-17 (EP-17)

PERIODICAL: Teploenergetika, no. 11, 1962, 63 - 67

TEXT: Steels EI-695R (containing 0.08-0.11% C, 0.47-0.60%
Si, 1.40-1.46% Mn, 13.9-14.3% Cr, 19.1-19.2% Ni, 2.68-2.75% W,
0.96-1.08% Nb, 0.005% B, 0.01% S and 0.02% P) and EP-17
(containing 0.10-0.11% C, 0.18-0.28% Si, 1.31-1.35% Mn, 16.51%
Cr, 13.22-13.67% Ni, 2.27-2.40% W, 0.62-0.77% Nb, 0.005% B,
0.006% S and 0.016% P) were specified as materials for the steam
pipe of the boiler ПК-31 (PK-31), the latter material being
considered more suitable for parts of the conduit operating under
supercritical conditions of steam, temperature and pressure.
Before the boiler could be fabricated, it was necessary to
determine the optimum welding procedure and to train the welders;
the results of this work are described in the present paper. The
metal-arc welding technique was used to make test butt-joints
Card 1/4

Welding of ...

S/096/62/000/011/005/006
E193/E383

in tubes of the following sizes: 32 x 7.5 mm and 76 x 18 mm
for steel EI-695R; 76 x 16.5 mm for steel EP-17. Since the
main object of the investigation was to establish conditions
under which the proneness of the welds to develop hot cracks
could be eliminated, several electrodes were used in the tests;
these are listed.   in Table 2 together with the chemical
analysis of weld deposits obtained with these electrodes.
Single-V bevel was used in the case of thin-walled tubes, both
single-V and single-U bevels,with an included angle of 20 or
30°, being tried in preparing the edges of thick-walled tubes.
After the deposition of each bead weld, the weld was cooled
to about 100 $^\circ$C and the slag residues were carefully removed
before the next run. Various welding schedules were tried,
each in three variants: 1 - without a backing ring; 2 - with
a removable copper ring; 3 - with a metal ring which was left
after welding. The quality of the weld was determined metallo-
graphically, more than 100 microsections having been examined.
Based on the results of these experiments, the following
optimum conditions were established: 1 - single-V bevel with
the included angle of 60-70° should be used for welding
Card 2/4

S/096/62/000/011/005/006
E193/E383

Welding of ...

EI-695R steel tubes (32 mm in diameter, 75 mm wall thickness).
A permanent backing ring should be used and the root welds
should be made with the AЖ -13-15 (AZh-13-15) electrodes,
2.5 mm in diameter;   2 - for joining EI-695R steel tubes,
76 x 18 mm in size, U-shaped bevel with the included angle of
30° should be used; a permanent backing ring should be
employed for making the root weld; both V- and U-shaped bevels
can be used for joining EP-17 steel tubes of this size because
welds made with the TsT-10 electrodes are less prone to hot
cracking;   3 - a minimum current (not exceeding 60 - 75 A with
electrodes 2.5 mm in diameter, or 80 - 100 A with electrodes
3 mm in diameter) should be used; the crater in the weld should
be filled in before the electrode is changed and the arc should
be broken at a distance of 8 - 10 mm from the crater; narrow
welds should be deposited almost without transverse movement of
the electrode;   each weld, after cooling to 60 - 70 °C, should
be cleaned with an abrasive wheel. - These recommendations were
followed in the fabrication of the steam superheater and the
steam conduit pipe of the boiler PK-31. Destructive and non-
destructive tests showed that no cracking occurred in the welds,
Card 3/

Welding of ...

S/096/62/000/011/005/006
E193/E383

all of which conformed to the quality standards set by the
process-control specifications. Several conclusions were
reached. 1) Although satisfactory metal-arc welded butt-
joins in tubes, made of the new austenitic steels EI-695R and
EP17, can be obtained, the welding technique employed requires
great care and rigorous control at every stage of the fabri-
cation process. As a result, the technique is time-consuming,
and its use can be economically justified in the manufacture
of experimental plant only. 2) The austenitic electrodes
AЖ-13-18 (AZh-13-18) and AZh-13-15 cannot be recommended for
welding tubes of steel EI-695R under industrial conditions.
Strongly adhesive slag formed by these electrodes has to be
carefully removed after each run and even then it cannot be
guaranteed that hot cracks will not occur. Further development
work is required to change the nature of the slag formed by
these electrodes and to eliminate the tendency of the welds to
hot cracking. 3) The ЦТ-16 (TsT-16) electrodes can be
recommended for welding steel EP-17 tubes. There are 7 figures
and 3 tables.
ASSOCIATIONS: Yuzhteploenergomontazh-MF,"Orgenergostroy" - Kiyev
Card4/ Politekhnicheskiy institut (Kiyev Polytechnical Institute)

GOTLIB, Ye.A., inzh.; POLYAKOVA, R.B.k inzh.; YASHCHENKO, Ya.V., inzh.

Welding of pipes made with EI-695R and EP-17 make austenite steels.
Teploenergetika 9 no.11:63-67 N '62.   (MIRA 15:10)

1. Yuzhteploenergomontazh, Vsesoyuznyy institut po proyektirovaniyu
organizatsiy energeticheskogo stroitel'stva i Kiyevskiy politekhni-
cheskiy institut.
                    (Pipe, Steel—Welding)

L 40872-66   EWT(1)   W W

SOURCE CODE: UR/0124/65/000/011/B088/B088

ACC NR: AR6014924

AUTHOR: Yashchenko, Ya. V.

TITLE: Investigation of the effect of audio frequency vibration on the heat exchange rate in viscous media

SOURCE: Ref. zh. Mekhanika, Abs. 11B611

REF SOURCE: Vestn. Kiyevsk. politekhn. in-ta. Ser. teploenerg., no. 1, 1964, 15-20

TOPIC TAGS: heat exchange, audio frequency oscillator, convective heat transfer, viscous fluid

ABSTRACT: The intensification of heat exchange due to vibration of the liquid (water and transformer oil) under conditions of free convection was investigated experimentally. A current-heated tube of diameter 2.88 mm served as the operating unit and an electromagnetic automobile audio signal was used as the vibrator. The experiments were carried out at frequencies of 50, 90, 126, 180, and 300 hz and at amplitudes of 0.4 to 2.6 mm. The temperature of the liquid was varied from 20 to 80C. On the basis of the experimental data with vibration in the indicated range of the parameters, the dimensionless relation $N^* = 0.29 (R^* P)^{0.M}$ is obtained, where N^* and R^* are the Nusselt and Reynolds numbers during vibration and P is the Prandtl number. The mean square vibration rate of oscillation is used as the characteristic velocity in the value of R^*. The maximum ratio of the dimensionless number N^* to the number N (without

Card 1/2

L 40872-66

ACC NR: AR6014924

vibration) reached the value $N*/N = 21$ in the experiments under consideration. Bibliography of 6 citations. V. P. Lukash /Translation of abstract/

SUB CODE: 20

Card 2/2   11b

ACC NR: AP7004397 (N)   SOURCE CODE: UR/0226/67/000/001/0044/0046

AUTHOR: Miroshnikov, V. N.; Yashchenko, Ya. V.

ORG: Institute for Problems in Science of Materials, AN UkrSSR, (Institut problem materialovedeniya, AN UkrSSR); Kiev Polytechnic Institute (Kiyevskiy politekhnicheskiy institut)

TITLE: Set up for studying the oxidation of packing materials in water vapor with superhigh parameters

SOURCE: Poroshkovaya metallurgiya, no. 1, 1967, 44-46

TOPIC TAGS: high pressure research, oxidation, high temperature oxidation, parameter, packing material, water vapor, vapor pressure

ABSTRACT: A set-up for measuring oxidation processes in materials used in water vapor medium at superhigh parameters is described. The set-up is applicable at vapor pressures of up to 140 atm and temperatures up to 570C. It is part of boiler plant PK-31, also described in this paper. Orig. art. has: 2 figures. [Based on authors' abstract]
[AM]

SUB CODE: 11, 13/SUBM DATE: 02Aug66/ORIG REF: 002/
Card 1/1

GORENSHTEYN, M.M., kand.tekhn.nauk; KIRILLOV, B.S., kand.tekhn.nauk;
        TKACHENKO, V.K., inzh.; GOLTVENKO, A.I., inzh.; POGORZHEL'SKIY,
        V.I., inzh.; BARANETS, P.D., inzh.; YASHCHENKO, Z.A., inzh.;
        FIL'CHAKOVA, V.A., inzh.

Establishing the most satisfactory conditions for rolling on
blooming mills with increased load on the main driving motor.
Izv. vys. ucheb. zav.; chern. met. no.3:91-101 Mr '58.

                                            (MIRA 11:5)

1.Zhdanovskiy metallurgicheskiy institut i zavod "Azovstal'".
                (Rolling mills—Electric driving)

SOV/133-58-8-10/30

AUTHORS: Gorenshteyn, M.M., Candidate of Technical Sciences, Docent, and Yashchenko, Z.A., Engineer

TITLE: Investigation of the Conditions of Rolling Rail-steel Ingots of Increased Weight in the Blooming Mill 1170 (Issledovaniye rezhima prokatki utyazhelennykh rel'sovykh slitkov na bluminge 1170)

PERIODICAL: Stal', 1958, Nr 8, pp 711 - 715 + 1 plate (USSR)

ABSTRACT: An investigation was carried out for the purpose of establishing rational rolling regimes for 9.76-ton rail-steel ingots, so as to secure a higher output without overheating of the motor under normal operating conditions. The investigation was carried out in two stages; in the first stage, the initially developed scheme of reduction, as enumerated in Table 1, was used. In the second stage, an improved regime was used which has since been adopted for normal production (Table 2). During the first stage of the experiments, the following parameters were recorded oscillographically (film speed 10-50 mm/sec): current intensity, voltage, power and rpm of the main (7 000 hp) motor, torque variations of the lower spindle; the 50 cps current was used for time marking. During the second stage of the investigations, the recordings were made on a 9-loop Siemens oscillograph with a film speed of 22 mm/sec and, in addition to the previously enumerated

Card1/3

Investigation of the Conditions of Rolling Rail-steel Ingots of   SOV/133-58-8-10/30
Increased Weight in the Blooming Mill 1170

parameters, the changes in the rpm and the current con-
sumption of the motor of the pressure installation were
recorded; furthermore, the degrees of reduction in the
metal temperature after the first and before the last pass
were measured. It was found that the developed regimes for
rolling 9.76-ton ingots of 270x280 mm permit maintaining a
high productivity under normal conditions of operation of
the main motor of about 7 000 hp, without causing over-
heating. The basic condition of successfully reducing the
rms current intensity to 92-94% of the nominal value is
strict standardisation of the rolling speed, limiting the
rpm during the first nine passes. Relations have been
established which govern the character and the magnitude
of the influence of speed control on reducing the rms
current intensity; the changes of the rolling-speed regimes
under conditions of manual control of the main motor; the
standardisation of the rpm during gripping, during steady-
state rolling and ejection. All these are important not only for
the concrete case of rolling very heavy ingots but also when
evolving new and more intensive reduction regimes for

Card 2/3

Investigation of the Conditions of Rolling Rail-steel Ingots of
Increased Weight in the Blooming Mill 1170   SOV/133-58-8-10/30

        ingots of current weights. By taking into consideration the
        relations established in the experiments, it is possible to
        avoid overheating of the main motor.
        There are 4 figures and 2 tables.

ASSOCIATIONS: Zhdanovskiy metallurgicheskiy institut (Zhdanov
                 Metallurgical Institute) and Zavod "Azovstal'"
                 ("Azovstal'" Works)

                 1. Steel--Processing   2. Rolling mills--Operation
Card 3/3   3. Rolling mills--Equipment

S/137/61/000/012/074/149
A006/A101

AUTHORS: Val'ter, O.I., Kostyuk, V.A., Kologrivov, N.P., Yashchenko, Z.A.

TITLE: Studying the nature of metal deformation during rolling with the aid of radioactive isotopes

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 1-2, abstract 12D6 (V sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, T. 3", Moscow, Gostoptekhizdat, 1961, 207 - 209)

TEXT: The investigation was made during the rolling of P-50 (R-50) type rail sections from an ingot weighing 9.76 tons, and of a Nr.36 double Tee beam section, rolled from a killed steel ingot weighing 6.75 tons. The ingots were rolled in conventional order. The nature of metal deformation in these sections was studied with the aid of the P^{32} radioactive isotope. The P^{32} isotope was introduced by separate portions and at certain intervals into the mold with the molten metal. Thus a series of zones were obtained during the crystallization process. The deformation of these zones during rolling should reflect the nature of the flow and the metal. A method was developed to study the deformation of

Card 1/2

Studying the nature of metal deformation ...

S/137/61/000/012/074/149
A006/A101

composite rolled sections and data were obtained which are of practical interest for calibrating operators when developing new and corrected existing grooves.

N. Yudina

[Abstracter's note: Complete translation]

Card 2/2

YASHCHENKO, Z.A., inzh., referent; SKLYARENKO, N.K. [translator]

Planetary rolling mill for hot strip rolling (from
"La metallurgia italiana," no.4, 1961). Met. i
gornorud. prom. no.4:95   Jl-Ag '62.
                    (Italy--Rolling mills)

YASHCHENKO, Z.G.

Using electric prospecting for studying the occurrences of karst in the Angara and Western Dvina Valleys. Izv. vys. ucheb. zav.; geol. i razv. 2 no.1:104-110 Ja '59.   (MIRA 12:10)

1. Institut "Gidroenergoproyekt."
        (Angara Valley--Karst)
        (Western Dvina Valley--Karst)
        (Electric prospecting)

YESAKOV, I.S.; YASHCHENKO, Z.G.

Interpreting vertical electric sounding curves by the T method.
Razved. i prom. geofiz. no.30:50-54 '59.   (MIRA 12:12)
          (Electric prospecting)

YASHCHENKO, Z.G.; YESAKOV, I.S.

Use of electric prospecting in studying the elastic properties
of igneous rocks. Razved.i prom.geofiz. no.33:23-29 '59.
(MIRA 13:4)

(Rocks--Electric properties) (Elasticity)

NIKITIN, V.N., inzh.; YASHCHENKO, Z.G., inzh.

Determining dynamic moduli of elasticity in research for the
Chirkey Hydroelectric Power Station. Gidr.stroi. 33 no.4:37-
38 Ap '63.   (MIRA 16:4)
(Chirkey Hydroelectric Power Station—Rocks—Elastic properties)

YASHCHENKO-KARTSEVA, A.G. [IAshchenko-Kartseva, A.H.]

Effect of the ligature of the abdominal aorta on blood pressure, respiration, and reflex excitability of the spinal cord. Fiziol. zhur. [Ukr.] 7 no.6:793-802 N-D '61. (MIRA 15:3)

1. Laboratoriya fiziologii dykhaniya Instituta fiziologii im. A.A. Bogomol'tsa AN USSR, Kiyev.
(AORTA)
(LIGATURE (SURGERY))

YASHCHENOK, V.

Banner of competition is evident to all. Sov.shakht. 13 no.1:22-
23   Ja '64.
(MIRA 17:3)

1. Predsedatel' Kadiyevskogo gorodskogo komiteta professional'nogo
soyuza ugol'shchikov.

YASHCHERITSYN, F. I.

Utilizing the experience of the best grinding machine operators
Sverdlovsk, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry
Uralo-Sibirskoe otd-nie 1952. 49 p.

(Novatory proizvodstva)   (54-18068)

TJ1280.I2

YASHCHERITSYN, P. I.

Cutting Machines

Use of hard alloy cutters. Podshipnik, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, ___May___ 195%. Unclassified.

YASHCHERITSYN, P. I.

GRINDING AND POLISHING

Experience in grinding tempered steel parts. Podshipnik no. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, __October__ 195ß. Unclassified.

YASHCHERITSYN, P. I.

GRINDING AND POLISHING

Increasing Productivity and coefficient of utility of centerless grinder. Podshipnik
no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, ___October___ 1952. Unclassified.

YASHCHERITSYN, P.I.; LOSKUTOV, V.V., kandidat tekhnicheskikh nauk, retsenzent; BUKHVALOVA, K.I., inzhener, redaktor; DUGINA, N.A., tekhnicheskiy redaktor

[High-speed grinding] Skorostnoe shlifovanie. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1953. 110 p.
(MLRA 7:10)
[Microfilm]
          (Grinding and polishing)

YASHCHERITSYN, P.I.; GORELOV, V.M., inzhener, retsenzent; LOSKUTOV, V.V.,
kandidat tekhnicheskikh nauk, redaktor; DUGINA, N.A., tekhnicheskiy
redaktor

[Grinding] Shlifovanie. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
stroitel'noi lit-ry, 1954. 53 p. (Nauchno-populiarnaia biblioteka
rabochego stanochnika, no.19) [Microfilm]   (MLRA 8:2)
        (Grinding and polishing)

YASHCHERITSYN,P.I.; MEL'NIK,S.L.; CHERNYAK,I., redaktor; TRUKHANOVA,A.,
tekhnicheskiy redaktor

[The new and the progressive in industry; work practices of machine
building factories in Minsk] Novoe, peredovoe v proizvodstvo; iz
opyta raboty mashinostroitel'nykh zavodov goroda Minska. Minsk, Gos.
izd-vo BSSR, 1955. 43 p.   (MLRA 9:1)
                    (Minsk--Machinery industry)

KOSTKIN,V.V.; GORKZKO,P.A.; YASHCHERITSYN,P.I., kandidat tekhnicheskikh
   nauk, redaktor; ALEKSANDROVICH,Kh., tekhnicheskiy redaktor

[Sulfidation of rubbing surfaces] Sul'fidirovanie poverkhnostei
treniia. Minsk, Izd-vo Akademii nauk BSSR, 1955. 89 p.
      (Friction) (Surfaces (Technology))   (MLRA 9:1)

112-57-7-14860

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 7, p 154 (USSR)

AUTHOR: Yashcheritsyn, P. I., and Karchan, Ya. S.

TITLE: Some Problems of Automation of Control in the Process of Grinding
(Nekotoryye voprosy avtomatizatsii kontrolya v protsesse shlifovaniya)

PERIODICAL: Sb.: Mashinostroitel' Belorussii, Minsk, 1956, Nr 1(2), pp 135-144

ABSTRACT: Bibliographic entry.

Card 1/1

YASHCHERITZYN, P.I., kand.tekhn.nauk; KARCHAN, Ya.S., inzh.

Automation of the production line of certain metal-cutting
equipment. Mash.Bel. no.4:122-131 '57.   (MIRA 11:9)
        (Metal cutting)   (Automatic control)

YASHCHERITSYN, P.I., kand.tekhn.nauk; KOSACHEVSKIY, L.N., inzh.

Effect of some technological factors on the surface smoothness
and the durability of antifriction bearing balls. Mash.Bel.
no.4:132-137 '57.   (MIRA 11:9)
              (Ball bearings)

YASHCHERITSYN, P. I.
P. Y

SOV/2785

PHASE I BOOK EXPLOITATION

25(5)

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti.
Belorusskoye respublikanskoye pravleniye

Puti sovershenstvovaniya tekhnologicheskikh protsessov na Minskom podshipnikovom zavode (Improving Technological Processes at the Minsk Bearing Plant) Minsk, Gos. izd-vo BSSR, 1958. 226 p.
2,000 copies printed.

Eds.: M. Baranovskiy and F. Kashtanov; Tech. Ed.: N. Stepanova.

PURPOSE: This collection of articles is intended for industrial and mechanical engineers.

COVERAGE: The collection of articles reviews the attainments of the Minsk State Bearing Plant since its entry into production during the Fifth Five-Year Plan and a description is given of the methods adopted by the plant to raise the technological levels of production through introduction of new machinery and modern production processes and through the modernization of existing equipment. The role of Party work in the "struggle" for technological progress is also reviewed. The introduction mentions the achievements of the following technical

Card 1/3

SOV/2785

Improving Technological Processes   (Cont.)

personnel: P.A. Kovalenko, assistant director of the tooling shop; engineers V.A. Feygin, A.A. Malakhovskiy, and A.F. Segodnik; designer M.Ye. Makhanek; and technologists Ye.S. Artyukhovskaya and A.A. Desyatkovaya. There are no references.

APPROVED FOR RELEASE

Card

SOV/2785

Improving Technological Processes (Cont.)

in Regulating Labor Standards and Wages in Machine Manufacturing   180

Dobrolyubov, A.N. (Assistant Director of the Engineering and Power   193
Section). Our Experience in Modernizing Equipment

Kosachevskiy, L.N. (Chief Metallurgist). Improving Hot Working   208
Processes at the Plant

AVAILABLE: Library of Congress (TJ1061.N37)

JG/gmp
1-22-60

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PHASE I   BOOK EXPLOITATION   SOV/3695

Yashcheritsyn, Petr Ivanovich

Shlifovaniye (Grinding) 2nd ed. Moscow, Mashgiz, 1958. 62 p.
  (Series: Nauchno-populyarnaya biblioteka rabochego stanochnika,
  vyp. 20) 18,500 copies printed.

Reviewer: V.M. Gorelov, Engineer; Ed.: V.V. Loskutov, Candidate
  of Technical Sciences; Tech. Ed.: N.A. Dugina; Executive Ed.
  (Ural-Siberian Division, Mashgiz): G.A. Sarafannikova.

PURPOSE: This booklet is intended for machine-tool operators.

COVERAGE: This booklet describes the process of machining metal
  parts by grinding. It discusses surface and internal center and
  centerless cylindrical grinding as well as high-speed grinding.
  The structure and composition of abrasive wheels is described.
  No personalities are mentioned. No references are given.

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YASHCHERITSYN, P.I., kand.tekhn.nauk; KARCHAN, Ya.S., inzh.

Automation of certain technological processes. Mash.Bel. no.5:
112-126 '58.   (MIRA 12:11)
              (Automation)

SOV/123-60-1-447

AUTHOR: Yashcheritsyn, P.I.

TITLE: Technological Problems Concerning the Further Development of
              Automation in Machine Construction

ABSTRACT: It is pointed out that the development of automation in machine
              construction should be accompanied by an increased efficiency
              of mechanical operations. This may be attained with the aid of
              processes with continuous operating cycle, by increasing the
              length of the tool cutting edge, by applying interchangeable
              adjustment of automatics and improving the design of grinding
              machines. Grinding machines should be equipped with servo
              feeds which make it possible to increase the operating
              efficiency by 30%, with mechanisms for the compensation of
              disk wear, warranting a constant rotation speed of the disk

Card 1/2

SOV/123-60-1-447

Technological Problems Concerning the Further Development of Automation in Machine Construction

in proportion to its wear. The author emphasizes the necessity of developing standard versions of automatic lines which would make it possible to design standardized line units (automatic operating devices, storing devices, conveyer installations, etc.), the manufacture of which could be centralized in specialized plants. It is necessary to solve some problems of organization in order to speed up the introduction of automated processes.

B.I.M.

Card 2/2

PHASE I   BOOK EXPLOITATION   SOV/3447

Yashcheritsyn, P.I., Candidate of Technical Sciences, Docent

Kachestvo poverkhnosti i tochnost' detaley pri obrabotke abrazivnymi
    instrumentami (Quality of Surface and Accuracy of Parts in
    Machinine With Abrasive Tools) Minsk, Gos. izd-vo BSSR, 1959.
    230 p.

Ed.: I. Chernyak; T ch. Ed.: N. Stepanova.

PURPOSE: This book is intended-for technical personnel concerned with
    the quality of machined surfaces.

COVERAGE: The book deals with grinding accuracy as affected by such
    factors as thermal phenomena and properties of the individual com-
    ponents of a system of grinding elements. Accuracy of surface
    grinding, external centerless grinding, internal grinding, polish-
    ing, and lapping are discussed. No personalities are mentioned.
    There are 19 references, all Soviet.

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Quality of Surface (Cont.)   SOV/3447

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Quality of Surface (Cont.)   SOV/3447

AVAILABLE: Library of Congress

                                                              VK/jb
Card 5/5   5-12-60

YASHCHERITSYN, P.I., kand.tekhn.nauk

Quality and accuracy of ground surfaces. Mash.Bel. no.6-119-140
'59. (MIRA 13:6)
(Grinding and polishing)

YASHCHERITSYN, P.I., dotsent, kand.tekhn.nauk

Effect of heat phenomena in the technological system and proper-
ties of the cooling fluid on the precision of finish grinding.
Mash.Bel. no.6:141-151 '59.   (MIRA 13:6)
          (Grinding and polishing)

YAKOVLEV, Georgiy Mikhaylovich; YASHCHERITSYN, P., red.; STEPANOVA,
    N., tekhn.red.

    [Some problems in high-speed milling and turning] Nekotorye
    voprosy skorostnogo frezerovaniia. Minsk, Gos.izd-vo BSSR.
    Red.nauchno-tekhn.lit-ry, 1960. 296 p.   (MIRA 13:5)
                    (Metal cutting)

YASHCHERITSYN, Petr Ivanovich; KASHTANOV, F., red.; DOMOVSKAYA, G.,
tekhn. red.

[Increasing the durability of ground parts; practice of the
bearing industry] Povyshenie dolgovechnosti shlifovannykh
detalei; iz opyta podshipnikovoi promyshlennosti. Moskva,
Gos.izd-vo BSSR. Red.proizvodstvennoi lit-ry, 1961.   109 p.
                                                    (MIRA 15:1)

        (Grinding and polishing)

YASHCHERITSYN, Petr Ivanovich; KASHTANOV, F., red.; STEPANOVA, N.,
tekhn. red.

[Our practice in the modernization of equipment and automation
of production processes]Nash opyt modernizatsii oborudovaniia
i avtomatizatsii proizvodstva. Minsk, Gosizdat BSSR, 1962. 96 p.
(MIRA 16:1)

1. Direktor Minskogo podshipnikovogo zavoda (for Yashcheritsyn).
   (Minsk--Bearing industry)   (Automation)

ACCESSION NR AM4021972   BOOK EXPLOITATION   S/

YAshcheritsyⁿn, Petr Ivanovich; Zhalnerovich, YEvgeniy Aleksandrovich

Grinding of metals (Shlifovaniye metallov), Minsk, Izd-vo "Belarus'", 1963,
    355 p. illus., biblio. 5,000 copies printed.

TOPIC TAGS: Metal grinding, automation, abrasive, grinding wheel

TABLE OF CONTENTS [abridged]:

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ACCESSION NR AM4021972

SUB CODE: ML   SUBMITTED: 26Sep63   NR REF SOV: 039

OTHER: 000   DATE ACQ: 09Apr64

Card 2/2

VELUTA, Nikolay Ivanovich; YASHCHERITSYN, i.i., doktor tekhn.
      nauk, red.

      [Economic efficiency of new techniques] Ekonomicheskaia
      effektivnost' novoi tekhniki. Minsk, Izd-vo "Nauka,"
      1964. 335 p.   (MIRA 17:7)

YASHCHERITSYN, P.I.

Effect of the structure of the operational cycle of internal
grinding machines on the quality of machined surfaces. Stan.
i instr. 36 no.10:13-15 O '65.   (MIRA 18:11)

YASHCHERITSYN, P.I., doktor tekhn.nauk, prof.

Effect of pickling on the working surface of machine parts.
Vest.mashinostr. 45 no.11:43-46 N '65.

(MIRA 18:12)

YASHERITSKII, P.I., doktor tekhn. nauk, prof.

Effect of fine gringing and polishing on the smoothness and
quality of machined surfaces. Vest. mashinostr. 45 no.6:69-73
Je '65.   (MIRA 18:6)

YASHCHERITSYN, P.I., kand. tekhn. nauk

Wear of abrasive tools and its effect on the engineering properties
of ground surfaces. Nauka - proizv. no.1:4-14 '63.

(MIRA 18:3)

YASHCHIKOVA, A. I. (Engr)

Dissertation: "The Effect of Alloy Composition of Interatomic Bonds in the Silver-
Aluminum System." Cand Tech Sci, Moscow Order of the Labor Red Banner Institute of
Steel imeni I. V. Stalin, 10 Jun 54. (Vechernyaya Moskva, Moscow, 1 Jun 54)

SO: SUM 318, 23 Dec 1954

21170

$24,7900$ $(1147, 1158, 1055)$

S/141/60/003/006/009/025
E032/E114

AUTHOR: Yashchin, E.G.

TITLE: Excitation of a Paramagnetic by Magnetisation
             Reversal

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
             1960, Vol.3, No.6, pp. 989-994

TEXT: The problem is formulated as follows. Consider the
behaviour of a magnetic moment in a magnetic field which is
rotating but is constant in magnitude. Neglecting relaxation
and friction effects the equation of motion is given by:

$$(d/dt)M = \gamma\ [MH]$$ (1)

where γ is the gyromagnetic ratio of an electron (or nucleus),
$\underline{M}$ is the magnetic moment and $\underline{H}$ is the magnetic field. In the
case of a rotating field of the form

$$H_z = H_0 \cos (\Omega t),\qquad H_y = H_0 \sin (\Omega t)$$ (2)

the magnetic moment will "follow" the magnetic field if the
angular velocity of the magnetic field Ω is much smaller than
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E032/E114

Excitation of a Paramagnetic by Magnetisation Reversal

$\omega = |\gamma| H_0$.   This can be particularly easily verified if $\underline{M}$ and $\underline{H}$ are parallel at the initial instant of time, in which case it is sufficient to substitute into Eq. (1) a magnetic moment having the same time dependence as the magnetic field. Thus, a slow (adiabatic) rotation of the magnetic field does not excite the system, i.e. it does not increase its energy. Only when the magnetic field is rapidly (non-adiabatically) rotating will the magnetic moment lag behind the field (energy will increase; cf. Ryzhkov et al. Ref.5). The excitation of a paramagnetic system may therefore be achieved, for example, by rapid reversal of the magnetic field, the reversal taking place in a time interval much smaller than the relaxation time T_1.   As soon as the magnetic field passes through zero the magnetic moment will be antiparallel to the field and the system will be excited. Further growth in the magnetic field will adiabatically increase the energy of the system, i.e. in proportion to the increase in the frequency. Consider now a magnetic field of the form $\underline{H}(t) = \underline{H}_{max} t/T$ and introduced at an angle of $180° - \alpha$ to a constant magnetic field

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S/141/60/003/006/009/025
E032/E114

Excitation of a Paramagnetic by Magnetisation Reversal

H_0.   As the field $H(t)$ increases, the resultant magnetic field will rotate in the zy plane (containing H_0) and will vary in magnitude. The present author is concerned with the case where at t = 0 the magnetic moment is parallel to the constant field H_0. At subsequent times the magnetic moment may lag behind the resultant magnetic field H_{res} and the lag is defined by the angle Θ where $\cos \Theta$ is given by:

$$\cos \Theta = \frac{M_y \sin \psi + M_z \cos \psi}{|M|} \qquad (3)$$

In order to determine Θ, Eq.(1) must be solved subject to the magnetic field law

$$H_{res} = H_0 + H_t = y^0 H_0 \sin \alpha + z_0 \left[H(t) - H_0 \cos \alpha \right] \qquad (4)$$

Eqs. (1), (3) and (4) are then rewritten in a dimensionless form using the substitutions

$$m = M/|M|, \qquad \omega_0 = - \gamma H_0, \qquad \omega_{max} = - \gamma H_{max},$$

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$$\tau = \omega_0 t, \qquad \tau_0 = \omega_0 T, \qquad \underline{h} = \underline{H}_{res}(\underline{t})/H_0, \qquad h_{max} = H_{max}/H_0.$$

It is then necessary to find

$$\theta = \text{arc cos} (m_y \sin \psi + m_z \cos \psi) \qquad (3a)$$

subject to the initial condition $\tau = 0$, $\theta = 0$, where m_y and m_z are defined by

$$\dot{m}_x = - m_y h_z + m_z h_y; \qquad \dot{m}_y = - m_z h_x + m_x h_z;$$

$$\dot{m}_z = - m_x h_y + m_y h_z \qquad (1a)$$

and ψ and $\underline{h}$ by

$$tg \; \psi (\tau) = \frac{\sin \alpha}{h_{max} \; \tau/\tau_0 - \cos \alpha}; \qquad (4a)$$

$$h_x = 0; \qquad h_y = \sin \alpha; \qquad h_z = h_{max} \; \tau/\tau_0 - \cos \alpha.$$

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S/141/60/003/006/009/025

E032/E114

Excitation of a Paramagnetic by Magnetisation Reversal

The problem has been solved numerically using a digital computer for a number of special cases. Fig.4 shows θ as a function of time for different α ($\omega_0 = 10^{10}$ sec^{-1}, $\omega_{max} = 10^{11}$ sec^{-1}, $T = 10^{-7}$ sec). A similar case has been considered by Morgenthaler (Ref.6). However, there is a discrepancy between Ref.6 and the present results. The discrepancy is said to be due to incorrect simplifying assumptions introduced in Ref.6 (the term $\dot{\psi}\cos\dot{\phi}'\cotan\theta'$ was neglected). Acknowledgements are made to T.N. Pigolkina for solving Eqs.(1a), (3a) and (4a) on the digital computer БЭСМ-2 (BESM-2), and to V.M. Fayn for interest and discussions. There are 5 figures and 8 references: 6 Soviet and 2 non-Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute, Gor'kiy University)

Card 5/6

SUBMITTED: July 14, 1960

Excitation of a Paramagnetic by Magnetisation Reversal

Fig.4
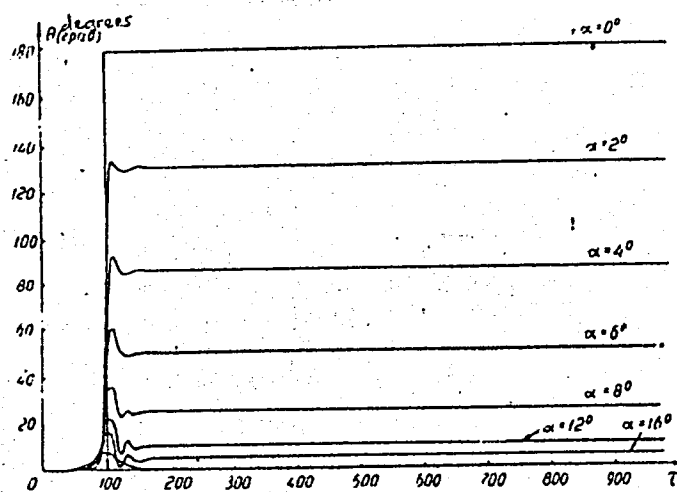
Рис. 4. Зависимость θ от безразмерного времени τ для различных α(ω₀ = = 10¹⁰ сек⁻¹, ω_макс = 10¹¹ сек⁻¹, T = 10⁻⁷ сек).

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83746

S/056/60/038/004/039/048
B006/B056

$9.4300(1035,1138,1143)$
24.7900

AUTHORS: Aleksandrov, A. P., Khanin, Ya. I., Yashchin, E. G.

TITLE: Observation of the Spontaneous Coherent Radiation of a
              Ferrite in a Resonator

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
              Vol. 38, No. 4, pp. 1334 - 1337

TEXT: As the previously used method of exciting ferrites does not lead
to satisfactory results, the authors employed a somewhat different prin-
ciple based upon the fact that the ferrite is excited at a frequency ν_1
which deviates from the frequency ν_2 of spontaneous radiation. Between
excitation and emission is the time $t_2 - t_1$, during which the external
magnetic field changes from $H_1 = 2\pi\nu_1/\gamma$ to $H_2 = 2\pi\nu_2/\gamma$, where γ is the
gyromagnetic ratio of the electrons. The block diagram of the apparatus
used is shown in Fig. 1, and is briefly described. The change of the
entire field in time is shown in Fig. 2. With $|H - H_1| \leqslant \Delta H$, where ΔH is

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Observation of the Spontaneous Coherent   S/056/60/038/004/039/048
Radiation of a Ferrite in a Resonator   B006/B056

the half-width of the resonance line of the ferrite, the ferrite enters
into interaction with the high-frequency field, and a precession of the
magnetic moment with the angle Θ is caused. In the following time inter-
vals, the precession frequency does not decrease with the eigenfrequen-
cies of the resonators $(\nu_1 < \nu < \nu_2)$ and the angle Θ decreases only in

consequence of relaxation processes: $\Theta = \Theta_o \exp(-(t-t_1)/\tau)$. With

$|H - H_2| \lesssim \lambda\pi\Delta\nu_2/2\gamma$, the ferrite emits a short pulse which is recorded

and amplified. The experiments were carried out at $\nu_1 = 8900$ Mc/sec;

the field of the electromagnet H equaled 3050 oe at a pulsed field

strength of 700 oe; $t_2 - t_1 = 3 \div 15 \cdot 10^{-9}$ sec. The process of coherent

emission of the spin system in a resonator has already been investigated
by V. M. Fayn; his results are used to estimate the energy and power of
the emission. For the power of a pulse, the relation

$P = const. \Delta t_2 \Theta_o^2 . \exp\left[-2(t_2-t_1)/\tau\right]$ is obtained, i.e., direct determination

of the relaxation time τ is possible by means of the experiment

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Observation of the Spontaneous Coherent   S/056/60/038/004/039/048
Radiation of a Ferrite in a Resonator   B006/B056

described. Fig. 3 shows an oscillogram of emitted signals and of the
ferromagnetic resonance. The strong signal is emitted with $H = H_2$, the
two weaker ones are the resonances with $H = H_1$. A spherically ground
yttrium ferrigarnet was used as ferrite. The authors thank A. G. Gurevich,
G. A. Smolenskiy, and K. P. Belov for making the samples available, and
they further thank A. M. Leonov for his assistance and V. M. Fayn for
his advice. There are 3 figures and 6 references: 1 Soviet, 1 French,
and 4 US.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
               universiteta (Institute of Radiophysics of Gor'kiy State
               University)

SUBMITTED: December 31, 1959

Card 3/3

$q, 2574 \, \text{lev} \, 1144$

28766

S/056/61/041/003/019/020
B113/B102

AUTHORS: Fayn, V. M., Khanin, Ya. I., Yashchin, E. G.

TITLE: Nonlinear properties of three-level systems

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
              no. 3(9), 1961 , 986-988

TEXT: A reaction (e.g. polarization P) of a three-level system to two
monochromatic signals may serve as characteristics of the nonlinear
properties of this system. E_1, E_2, E_3 are assumed to be three levels of
a quantum system. An external field $F = E_{13} \cdot \cos \Omega_{31} t + E_{23} \cdot \cos \Omega_{32} t$ (1) is
assumed to act upon this system; the frequencies are $\Omega_{31} \approx (E_3 - E_1)/\hbar$ and
$\Omega_{32} \approx (E_3 - E_2)/\hbar$. The equation for the density matrix f_{mn} is used in
order to determine the field-induced polarization of the system. If in
the solution of this equation only the resonance terms with the
frequencies Ω_{32}, Ω_{31}, and $\Omega_{31} - \Omega_{32}$ are used and if one goes over to a
system of corresponding algebraic equations, then the equation

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Nonlinear properties of three-level...

$$P = \rho_{31}^{-}\mu_{13}e^{-i\Omega_{31}t} + \rho_{32}^{-}\mu_{23}e^{-i\Omega_{32}t} + \rho_{21}^{-}\mu_{12}e^{-i(\Omega_{31}-\Omega_{32})t} + c.c. \quad (4)$$

is obtained where

$$\rho_{31}^{-} = 2i\gamma_{31}\Delta^{-1}(D_{13}^{(0)}[4(\tau_2^{-1}+\gamma_{23}^2\tau_1)+\tau_2\gamma_{13}^2] - D_{23}^{(0)}(2\tau_1+\tau_2)\gamma_{23}^2),$$

$$\rho_{32}^{-} = 2i\gamma_{32}\Delta^{-1}(D_{23}^{(0)}[4(\tau_2^{-1}+\gamma_{13}^2\tau_1)+\tau_2\gamma_{23}^2] - D_{13}^{(0)}(2\tau_1+\tau_2)\gamma_{13}^2),$$

$$\rho_{21}^{-} = \tfrac{1}{2}i\tau_2\gamma_{13}\gamma_{23}(\rho_{32}^{-}/\gamma_{32}+\rho_{31}^{-}/\gamma_{13}) = -2\gamma_{13}\gamma_{23}\tau_2\Delta^{-1}(D_{13}^{(0)}[2(\tau_2^{-1}+\tau_1\gamma_{23}^2)-\tau_1\gamma_{13}^2]+$$
$$+ D_{23}^{(0)}[2(\tau_2^{-1}+\gamma_{13}^2\tau_1)-\tau_1\gamma_{23}^2]);$$

$$\Delta = [4(\tau_2^{-1}+\gamma_{13}^2\tau_1)+\tau_2\gamma_{13}^2][4(\tau_2^{-1}+\gamma_{13}^2\tau_1)+\tau_2\gamma_{23}^2]-(2\tau_1+\tau_2)^2\gamma_{13}^2\gamma_{23}^2;$$

$$\gamma_{13} = \mu_{13}E_{13}/\hbar = \gamma_{31}, \qquad \gamma_{23} = \mu_{23}E_{23}/\hbar = \gamma_{32};$$

holds if $\Omega_{31} = (E_3 - E_1)/\hbar$ and $\Omega_{32} = (E_3 - E_2)/\hbar$ and $D_{13}^{(0)}$ and $D_{23}^{(0)}$ are equilibrium differences of the level population, τ_1 and τ_2 are the longitudinal and transverse relaxation times, respectively, and μ_{ml} is the matrix of the dipole moments. (4) indicates that the reaction of the system to two monochromatic signals contains a term with the combined frequency $\Omega_{12} = \Omega_{13} - \Omega_{23}$ which results from the nonlinearity of

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S/056/61/041/003/019/020
Nonlinear properties of three-level...   B113/B102

the system. There are 8 references: 2 Soviet and 6 non-Soviet. The
three most recent references to English-language publications read as
follows: N. Bloembergen, S. Shapiro. Phys. Rev., 116, 1453, 1959;
P. P. Sorokin, M. J. Stevenson, Phys. Rev. Lett., 5, 557, 1960;
A. Javan, W. R. Bennett, Jr., A. R. Herriott. Phys. Rev. Lett., 6,
106, 1961.

ASSOCIATION: Radiofizicheskiy institut Gor'kovskogo gosudarstvennogo
              universiteta (Radiophysics Institute of Gor'kiy State
              University)

SUBMITTED: June 26, 1961

Card 3/3

FAYN, V.M.; KHANIN, Ya.I.; YASHCHIN, E.G.

Interaction of electromagnetic oscillations in three-level systems.
Izv. vys. ucheb. zav.; radiofiz. 5 no.4:697-713 '62. (MIRA 16:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom universitete.
                            (Radio waves)   (Radio)

FAYN, V.M.; KHANIN, Ya.I.; YASHCHIN, E.G.

 Letter to the editor. Izv. vys. ucheb. zav. radiofiz. 7 no.2:
 386 · '64   (MIRA 18:1)

ACCESSION NR: AP4019239   S/0056/64/046/002/0695/0709

AUTHORS: Fayn, V. M.; Yashchin, E. G.

TITLE: Contribution to the theory of stimulated Raman emission

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 695-709

TOPIC TAGS: Raman emission, stimulated emission, stimulated Raman scattering, Raman laser self excitation, laser self excitation, fluctuation dissipation theorem, parametric generator, anti Stokes component, laser frequency doubling

ABSTRACT: In view of the recent feasibility of observation of different many-quantum light radiation and absorption processes owing to the development of lasers, the authors   construct a theory of two-quantum processes without   limitations on the spectrum of the atoms (or molecules) or the fields; this theory deals with the general behavior of an arbitrary quantum system capable

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ACCESSION NR: AP4019239

of resonance absorption in the presence of external forces. An ana-
log is derived of the fluctuation-dissipation theorem, relating the
noise in the presence of the external force to the susceptibility
of the system in the presence of the same force This is followed
by an analysis of the interaction between electromagnetic waves with
inclusion of stimulated Raman emission and a derivation of the self-
excitation condition for a Raman laser. The connection between Raman
lasers and parametric systems is also discussed. It is shown spe-
cifically that if the system under consideration has a natural fre-
quency ω_0 and if it is acted upon by a signal with frequency $\omega_1 > \omega_0$,

then negative absorption is produced at a frequency $\omega_2 = \omega_1 - \omega_0 < \omega_1$,

so that the system can become unstable against a signal at a frequen-
cy ω_2. Such an instability can occur in particular in a plasma

acted upon by an electromagnetic field. It is also noted that by
using stimulated Raman emission at a frequency $\omega_2 = 2\omega_1$ (anti-Stokes

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ACCESSION NR: AP4019239

component) it is possible to produce frequency doubling within the laser itself, since the molecular system in the laser is in an inverted state. Orig. art. has: 52 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute at   Gor'kiy University)

SUBMITTED: 16Jul63   DATE ACQ: 27Mar64   ENCL: 00

SUB CODE: PH   NO REF SOV: 008   OTHER: 009

Card 3/3

FAYN, Veniamin Moiseyevich; KHANIN, Yakov Izrailevich. Prinimali
uchastiye: GELKIN, V.N.; YASHCHIN, E.G.; TALANOV, V.I.;
ROZENBERG, Ye.L.; IVANENKO, N.D., red.

[Quantum radio physics] Kvantovaia radiofizika. Moskva,
Sovetskoe radio, 1965. 607 p.   (MIRA 18:3)

ACC NR: AP6036977   SOURCE CODE: UR/0181/66/008/011/3310/3319

AUTHOR: Genkin, G. M.; Fayn, V. M.; Yashchin, E. G.

ORG: Gor'kiy State University imeni N. I. Lobachevskiy (Gor'kovskiy gosudar-
stvennyy universitet)

TITLE: Nonlinear properties of a crystal lattice

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3310-3319

TOPIC TAGS: crystal, crystal lattice, crystal lattice vibration,
Green function, cross susceptibility tensor, laser, vibration,
Raman effect

ABSTRACT: An analysis is made of the nonlinear properties of an ion crystal
induced by vibrations in the lattice. Using Green's multi-temporal temperature
functions, an expression is obtained for the fourth-rank cross-susceptibility tensor
as a function of third and fourth-order anharmonicity in lattice vibrations. Two-
quantum, and particularly Raman processes, and the parametric interaction of
four waves, are investigated. The contribution of the effects of spatial dispersion

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ACC NR: AP6036977

in a harmonic medium to the third-rank cross-susceptibility tensor is examined.
Evaluations are made of tensor magnitudes. [Based on authors' abstract]

SUB CODE: 20/SUBM DATE: 16Oct65/ORIG REF: 007/OTH REF: 002/   [SP]

Card 2/2

ACCESSION NR: AP4032877   S/0051/64/016/004/0708/0709

AUTHOR: Vergunas, F.I.; Kolotkov,V.V.; Yashin,E.M.; Smirnova, L.I.

TITLE: Some properties of film type electroluminescent capaitors

SOURCE: Optika i spektroskopiya, v.16, no.4, 1964, 708-709

TOPIC TAGS: electroluminescence, electroluminescent capacitor, zinc compound, electroluminophor

ABSTRACT: The authors prepared and tested film type electroluminescent capacitors. The films were obtained by vacuum sublimation of yellow EL-580 electroluminophor (a zinc sulfide phosphor - composition not specified). There were prepared low-voltage and high-voltage film capacitors; the latter differed from the former by the presence of a dielectric layer between the sublimated film and the electrode. The films were about 1 micron thick; the electrodes were made of SnO_2 and Al. The variation of brightness as a function of the applied voltage is shown in the figure (Enclosure 01). As regards both their voltage and frequency characteristics the low and high-voltage capacitors differed from each other and from power-filled conventional capacitors. The low-voltage capacitors rectified the current in the range of low voltages. Where frequency dependence of the brightness is concerned the low-vol-

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ACCESSION NR: AP4032877

tage films are characterized by a horizontal curve (the brightness is frequency in-
dependent); the high-voltage capacitors by a rising straight line; the powder capa-
citors by a curve with a flat maximum. None of the film capacitors exhibited photo-
luminescence under stimulation by 354 and 310 mμ radiation. Investigation of the
brightness waves showed that the films have only one principal peak in phase with
the voltage. For films with a thick dielectric layer the peak was observed for both
polarities; for the films with a thin dielectric layer the brightness peak is
evinced only when the Al electrode is negative. Orig.art.has: 2 figures.

ASSOCIATION: none

SUBMITTED: 15Jul63   DATE ACQ: 07May64   ENCL: 01
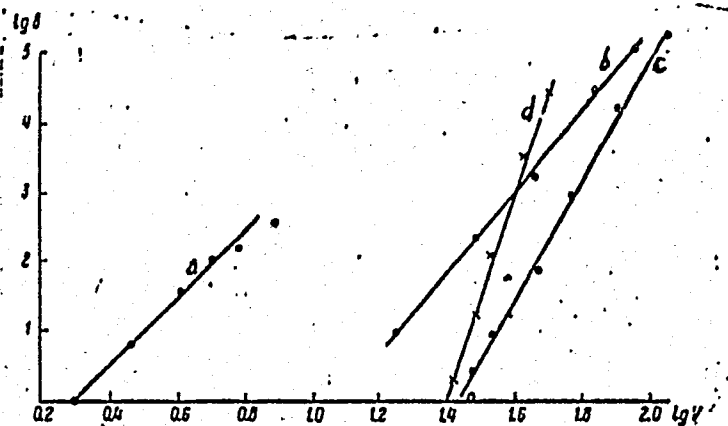
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Variation of brightness B with voltage V: a) low-voltage film,
b) powder, c) high-voltage film with thick dielectric layer,
d) film with thin dielectric layer.

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RASHCHEPKIN, K.Ye.; YASIN, E.M.

Stresses in a raised pipeline with fastened sections. Transp. i
khran. nefti i nefteprod. no.9;10-12 '64.   (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut po transportu i khraneniyu
nefti i nefteproduktov.

24.3500

66587

SOV/51-7-5-17/21

AUTHOR: Yashchin, P.B.

TITLE: On the Effect of Infrared Light on Luminescence of ZnS-Mn Phosphors

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 5, pp 691-696 (USSR)

ABSTRACT: Luminescence of ZnS-Mn phosphors, excited with ultraviolet frequencies is strongly affected by infrared irradiation. A flash produced by infrared irradiation becomes several hundred times stronger on lowering of temperature from +20°C (Fig 1) to -190°C (Fig 2). At -190°C (the liquid-nitrogen temperature) the steady-state intensity of the orange luminescence band is increased by infrared irradiation while the steady-state intensity of the blue band is lowered by infrared irradiation. Further experiments showed that : (1) the effect of infrared irradiation on luminescence of ZnS-Mn with 10^{-4} g/g of Mn increases with decrease of the ultraviolet excitation intensity, (2) increase of the amount of the Mn activator from 10^{-4} to 10^{-3} g/g lowers the magnitude of the rise of the steady-state intensity of the orange band produced by infrared illumination, (3) an additional activator, e.g. cobalt, (Fig 5) intensifies quenching of the blue band by infrared illumination and lowers the rise of the steady-state intensity of the orange band. Luminescence spectra of ZnS (Fig 3).

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On the Effect of Infrared Light on Luminescence of ZnS-Mn Phosphors

ZnS-Mn (Figs 4 and 5) and ZnS-Mn,Co (Fig 5) were recorded with and
without monochromatic infrared illumination. In each of these figures
curves 1 represent the effect of ultraviolet excitation (356 mμ) by
itself, and curves 2 represent the simultaneous action of ultraviolet
and infrared illuminations. The results obtained are due to liberation
of electrons from local levels (traps), which produces a flash in the
blue band, and liberation of holes from ionized blue centres. Free holes
are partially localized again at blue centres and partially recombine
with localized electrons without optical emission; this produces
quenching of blue luminescence by infrared radiation. In the presence
of an activator (Mn) holes liberated from the blue centres may be also
localized at non-excited orange centres. This produces an intensification
of the orange band. Infrared light liberates also electrons from
localized levels and this decreases the number of acts of radiationless
recombination of free holes and reduces quenching of the blue band.
This means that the effect of infrared light is a superposition of two
processes: liberation of holes which produce quenching and liberation
of electrons which intensify luminescence. Illumination with infrared
light increases the number of optical electrons (liberated from traps)
with energies considerably greater than that e of thermal electrons.
The optical electrons recombine with the blue centres and transfer their

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On the Effect of Infrared Light on Luminescence of ZnS-Mn Phosphors

excess energy to these centres. This produces broadening of the blue band. Acknowledgments are made to V.V. Antonov-Romanovskiy, Z.A. Trapeznikova and M.V. Fok for their advice. There are 5 figures and 1 table.

ASSOCIATION: Fizicheskiy Institut, Pol'skoy AN, Varshava (Physics Institute, Polish Academy of Sciences, Warsaw)

SUBMITTED: March 5, 1959

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S/081/62/000/017/056/102
B158/B186

AUTHORS: Vzhesinska, A., Yashchin, P.

TITLE: Quenching the luminescence of ZnS resulting from irradiation
                in an atomic reactor

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1962, 366, abstract
                17K96 (Rept. Inst. badań jadrow. PAN, no. 248, XIII, 1961,
                9 pp, ill. [summaries in Pol. and Eng.])

TEXT: The effect of irradiation in a nuclear reactor on the degree of
luminescence and afterglow from ZnS-luminescent substances obtained at
different calcining temperatures was studied. Luminescent substances,
irradiated by a neutron beam in a nuclear reactor, have less glow
intensity and give more rapid quenching with under-glow from infra-red
rays than non-irradiated substances. With irradiated substances the
quantity of reserve energy is lower than with non-irradiated substances.
[Abstracter's note: Complete translation.]

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